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## The mind and sexuality: Introduction to a Psychophysiological Perspective

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### Abstract

Cognition and sexuality are two distinct relational functions that are partially interconnected through our mind. Even though medical sciences have progressed substantially over the past decades, the current understanding of the mind psycho-physiology is yet at an early stage. As an example, the “mind-body problem” draws attention to the fact that fundamental aspects related to the understanding of the mind are still unresolved. Thus, it continues to be unclear how abstract ideas and thoughts (which are immaterial in nature, unfolding in an intangible realm) interface (and in some cases, interfere) with the more concrete brain and body (which are physical in nature), thus resulting in an abstract/conscious control of concrete/biological functions of the body; such is the case with processes involved in both cognition and sexuality. Beginning with this seminal paper we therefore intend to approach the psycho-physiology of the mind as an essential element to the understanding of the two (cognitive and sexual) relational functions, using the premises for that model as a basis for understanding of the larger “mind-body problem”.

## Introduction

The mental and medical sciences have made astonishing progress over the past 50 years, though sometimes in unpredictable/ unforeseen ways. Thus, many diseases- even ones previously considered incurable- have been eradicated, organs transplants are currently performed, organism cloning is under development, and child conception from more than two parents, though intensely debated, is a real possibility in the not-too-distant future. Yet despite medical advances related to human health and potential, little is currently known about the subtle psycho-physiological processes of the mind and sexuality (1, 2).

Regarding the mind, for example, it is still unknown how our abstract existence (abstract ideas/ thoughts) functions within a physical brain and body, from whence it intervenes not only in the decision making process but also in the elaboration/ coordination of motor responses. As an example, abstract expectations/ concerns (e.g. the preoccupation to get a promotion in one's career or to achieve fame and recognition) are sometimes more important in taking decisions than pursuit of concrete biological needs of our physical body (the need for food/ clothes). With such fundamental psycho-physiological processes yet unelaborated, the interrelationship and interdependence between the mind and the concrete (physical) functions of the body are far from being understood (2).

More specifically regarding sexuality, the ancestral purpose of this biological function has been to ensure perpetuation of species. However, in humans, sexuality has another deployment space, occurring not just as a physical process but also as a mental (non-physical) one. Thus, the "mind" takes into account social, cultural, or religious models and norms (that are typically abstract and intangible in nature) to control/ modulate the behavioural expression of sexuality (selectivity), resorts to abstract thoughts (gestures, imagination, dreams) for sexual activation and response, generates curiosities that initiate new explorations, and so on. The non-material mind is therefore able to control (even if only partly) the physiological/ autonomous process of sexual arousal-erection and is implicated in the genesis

of libido, with sexual activity culminating in an orgasmic event that not only represents a neurochemical process but also a conscious process (3). The manner in which the abstract/ intangible nature of the mind connects to the neurochemical support of our brain in order to control the specific neurophysiological functions of the body is known in literature as the mind-body “problem” (the term “problem” referring for the moment to the fact that it is an unresolved question) (4).

In light of the above, attempts (models and theories) designed to clarify/ explain “mind” functioning and its relationship to “body” functioning should meet the goal of leading to a better understanding of both psychological and biological systems. Ideally, such a theory should accommodate existing knowledge while accounting not only for a conscious existence but also for other conscious-related constructs such as the “unconscious,” an often underestimated entity.

## **Discussion**

### *Traditional Conceptualization*

*Regarding the mind* as an entity that is distinct from our physicality/ body (5), a major dilemma relates to the understanding of its scientific nature and relation to the brain, body and environment. Current interpretations of this problem continue to extend from the traditional psychological approach of monism (the brain and mind being one and the same) to the classical philosophical perspective of dualism (the brain and mind being separate entities) (6).

Broadly speaking, monism posits that existing mental phenomena can be explained in terms of a single reality. This reality may be purely mental, in that the mind is all that exists, with the external world being either mental itself or a projection of the mind; or, alternatively, it may be purely material, whereby only the physical reality exists, with mental/spiritual events being reduced to physical processes (7). The discipline of psychology is generally founded on this latter “organic” approach, thus assuming that psychological processes represent personal or subjective expressions of biological (biophysical,

biochemical) events. Accordingly, in the absence of the biological infrastructural support (e.g., when brain damage occurs), mental existence would cease (8).

Dualism, in contrast, is founded on a rigid distinction between the realms of mind and matter, stating that there are two fundamental and separate kinds of mediums: mental (of mind) and material (of brain). Thus, phenomena such as consciousness/ self-awareness, emotions, desire, abstract preoccupations, thinking and decision-making are related to an experience of reality beyond synapses and neurotransmitters, such that the non-material domain of abstract processes is uncorrelated with the physical nature of the brain (for example, the decision-making process could depend only on abstract ideas). The discipline of psychiatry often makes the inherent assumption of dualism, with psychotherapy sometimes viewed as an alternative approach to pharmaceuticals in the treatment of psychiatric disorders (9, 10). With respect to depression, for example, antidepressants and psychotherapy seem to have distinct impacts on cerebral metabolism as assessed by fMRI (11).

In fact, we posit that neither of the two presented concepts sufficiently addresses “the mind-body dilemma,” as each attempts to explain our mental existence in fairly absolute terms. Rather, a relative approach that specifies an actual structure and process for mind-body interaction could be more appropriate in developing a true psychophysiological understanding of the mind. Such a process would take into account not only our mental existence but also additional elements that include the surrounding environment/ external information as well as internal interactions responsible for creating an internal mental reality. To be able to explain this internal mental interaction, it is necessary to first describe the external-physical reality and the external physical interaction.

### *The Representation of Environmental Information*

*Regarding environment*, a current issue relates to the nature of reality around us, namely whether the world we see (the conscious reality for us) is a true representation of real world itself or whether it is merely an internal perceptual copy generated in our brain.

Direct (naïve) realism claims that the senses provide us with direct awareness of the external world. Thus, environmental objects are composed of matter, occupy space and have properties (size, shape, texture, smell, taste and colour) that are usually perceived correctly, that is, we perceive them as they really are (12).

Indirect realism (representationalism) maintains that we do not perceive the external world in its true state; rather we only have ideas and impressions of the way it is. Specifically, our ideas of the world are psychological interpretations of sensory input, derived from an external world that is real (13).

Environmental information is present in the form of concrete and abstract external data (14). Such data are received and transmitted to the cortex through two distinct input routes of the ascending reticular activating system (ARAS), namely the thalamo-cortical route (dorsal system of attention) for concrete data or the hypothalamo-cortical route (ventral system of attention) for abstract data (14, 15).

Concrete external data refer to the material (qualitative and quantitative) properties of environmental objects/ stimuli. Thus, external visual stimuli are present in the form of electromagnetic waves (being represented within the mind in the form of colors), external auditory stimuli are present in the form of pressure waves (sounds and pitch within the mind), external olfactory and gustative stimuli are present in the form of chemical compounds/ molecules (existing within the mind as sour for acids, bitter for bases), and so on. Colours, sounds, tastes and smells, etc. exist only in our mind and represent an internal psychological copy of the external physical reality. Indeed, we are not conscious about the material (e.g., photons of light) or physiological format (e.g., neural impulses) of information, which represents a non-existent and intangible reality for our mind (16). Only from scientific exploration, interpretation, and learning (not from the bodily senses) does the mind acquire the knowledge that hidden in the experience of light is an electromagnetic field (acting on cone cells and stimulating visual cortex), that behind sourness/ bitterness are ‘hidden’ acids/ bases (acting on papillae and stimulating gustatory cortex), and so on. These physical/ chemical stimuli are therefore the real external stimuli

interacting with our physical body/receptors, generating sensory inputs that need to be further processed towards internal/ mental stimuli (colours, sounds, etc.) to become accessible for (to be aware by) the mind (14, 17).

The abstract external data refers to intangible/ non-material information, which consist of associated messages/ ideas to external undefined stimuli (14). For example, a certain environmental abstract message can be encoded through Morse code using either light or sounds (18), but the medium (light or sound) is irrelevant to the abstract information. Similarly, the same words can be used to associate/ transmit distinct ideas or pure nonsense, depending on their sequence or arrangements. Signs, facial expressions, gestures, etc. are able to encode/ transmit various abstract messages, with no specific relation to the underlying material properties of a certain external stimulus.

### **Preliminary Conclusion**

Environmental stimuli have a physical/ chemical format (inaccessible to the mind: electromagnetic waves, chemical compounds, etc.) that encodes the environmental information. This environmental information refers to concrete external data (qualitative and quantitative properties of environmental stimuli) *and* to abstract external data (associated messages to environmental stimuli). Just as the physical body exists within environment wherein interacts with the surrounding physical/ chemical stimuli (an *external* physical interaction), our mental entity/identity exists within an *internal* mental reality that is composed of *internal mental stimuli*. We elaborate more about the nature of this internal mental reality and the corresponding internal mental interaction (that is parallel to the external physical interaction) in subsequent, forthcoming papers.

### **Disclosure**

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